

SERVICE AND INSTRUCTION MANUAL
MODEL: 12424

Engineered and Manufactured by INDUSTRIAL CONTROL DIVISION
STERLING, INC.
5200 West Clinton Avenue, P.O. Box 23435, Milwaukee, Wisconsin 53223-0435
Manufacturers of Temperature Control Equipment Since 1916

Please note that our address and phone information has changed. Please reference this page for updated contact information.



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MOTOR BULLETIN

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SPARE PARTS LIST

INSTALLATION

The unit should be placed into position at the press. The user's mainfolds for raw water and drain should be brought to the back of the unit.

DELIVERY AND RETURN connections are located at the rear of the unit. If the water must travel some considerable distance to the work area, the piping should be kept the same size as that of the connections in order to minimize losses in flow resulting from fluid resistance.

WATER SUPPLY AND DRAIN are 3/4" size and are located at the rear of the unit. If 300 F. water temperatures are to be maintained, a minimum of 60 psig pressure must be maintained on the water supply line to each zone, from the user's water supply. If the water temperatures will not exceed 250 F. then the user need only provide an 25 psig minimum water supply pressure. The importance of these pressure/temperature relationships cannot be OVERLY STRESSED and the user must supply a sufficient water supply pressure.

Back pressure from the drain, if any, should not approach or exceed the pressure of the water supply, since in large measure the cooling capacity of the unit is directly related to the difference in pressure between the water supply and drain.

ELECTRIC POWER is brought th the unit through the power cable which is supplied with it. This cable is fitted with a Russell & Stoll plug for quick attachment to a corresponding outlet at the press. Each zone will use approximately 25 amps when running full-load on 3/60/460 power. A ground line is brought out from each zone through the cable and power plug and the user should exercise care to insure that a safe and secure ground connection is made.

THE UNIT should be rolled into position & service connections installed. Water supply and drain connections are attached and the delivery and return connections should be made. With the disconnect switch "off", the user should attach the power-cable to the power supply connection at the press.

SHUNT WIRES should be removed from the thermometers before the instrument modules are placed in service. Each module is tagged to show this requirement.

DESCRIPTION

This unit is intended to be a two zone, high circulating capacity, water-circulating temperature control system. The design of the unit provides for the easy removal of the controller trays from the unit if service should become necessary, without the need to stop the entire unit. The unit is a completely portable design with full sheet metal cabinet, with hinged service doors, large casters and power cable with plug.

HEATING- Each zone is provided by a 4500 watt electric immersion heater, 3 phase low-watt density, of the flanged type. The heater is energized through a 3 pole relay, upon demand by the temperature controller.

PUMPING for each zone is provided by a straight centrifugal pump, bronze-fitted, 3450 RPM.

COOLING is accomplished by the direct injection method which blends cooling water directly into the circulating system under carefully controlled thermostatic conditions. This method of cooling provides for a very great cooling capacity and allows the user to make very efficient use of his cooling water. Because the total amount of cooling water entering the system is directed through the work area by employment of a check valve.

THERMOSTATIC CONTROL of the system is maintained by a solid state electronic controller with heating and cooling relay output. Three stable, wire-wound temperature sensors, one sensing the need for heating and the other sensing the need for cooling, monitor process temperatures and relay readings back to the controller for each zone. The solid state design of these components assures exceptionally precise and trouble-free operation. The single-set controller energizes either the heater or the cooling, and indicates system temperature.

SYSTEM TEMPERATURES can be easily read on the two 3" meters of each control zone. One shows delivery water temperature and the other indicating return water temperature.

PRESSURE GAUGES for each zone indicate total water pressure on the delivery line and on the return line. The readings indicate total pressures which are made up of water supply pressures plus the pump pressure at the point where the reading is taken. The difference between the two gauges will indicate the total resistance to flow in that particular zone. The gallonage of water being circulated is directly related to the total resistance to flow. Best flow situations are accompanied by low resistance to flow.

WATER PROTECTION has been provided in the form of a pressure switch which is built into each zone. The pressure switch will keep the zone from operating until it has been sufficiently pressurized by the user's water supply. This will help greatly toward protecting the heater and the pump seal from damage through operation without water. This switch is adjustable.

NOTE: IF THIS UNIT IS TO BE OPERATED TO 300F. , THE PRESSURE SWITCH SHOULD BE ADJUSTED TO A MINIMUM OF 60 PSI. This will assure the unit of having sufficient pressure at that temperature to eliminate possibilities of internal boiling.

OPERATION

After all the water supply, drain, electrical, and delivery & return connections have been made, the following steps should be taken to place the unit into service.

1. Turn on the electrical power at the disconnect switch of the unit.
2. Turn on the water supply to provide water for each zone. this should remain open and under sufficient pressure (see installation instructions) at all times. The drain line should also be open and should remain so.
3. Set the selector switch of the unit to "water on".
4. Set each thermostat at approximately 100 F.
5. Hold the vent button of each zone for at least 45 seconds in order that all entrapped air be expelled to the drain and a steady flow of water to the drain established. This should be done one zone at a time, not all at once.
6. After air purge, the start button should be pushed. If the water supply connections to the press and mold allow sufficient pressure, the unit will continue to run when the start button is released. The green pilot light will indicate whether or not the pump is running. MOTOR ROTATION SHOULD BE CHECKED IMMEDIATELY and corrected immediately if necessary. If the motor does not continue to run when the start button is released, the user should check to be sure that the water supply is turned on.
7. Set the thermostat for the desired operating temperature. The unit will operate automatically and continuously from this point.

MODEL: 12424

| <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-----------------|---|
| 729-00023 | Contactator |
| 728-00009 | Disconnect Switch |
| 728-00014 | Operating Mechanism |
| 725-00547 | Fuse, Motor 15 amp |
| 725-00599 | Fuse, Control .5 amp |
| 725-00604 | Fuse, Control 1.8 amp |
| 722-00048-01 | Heater, Immersion 4.5 KW @ 460V |
| 037-00021 | Gauge, Pressure |
| 720-09012 | Motor, Electric |
| 715-00006 | Pilot Light |
| 691-00003-04 | Probe, Sensing Temperature |
| 605-00086-03 | Pump & Motor Assembly Complete |
| 721-00001 | Pushbutton, Start |
| 721-00003 | Pushbutton, Stop |
| 721-00002 | Push Button, Vent |
| 726-00002 | Starter, Motor |
| 733-00006 | Switch, Pressure |
| 717-00006 | Switch, Selector |
| 717-00005 | Switch, Selector |
| 724-00099 | Thermostat, Safety |
| 704-00027 | Transformer |
| 044-00138 | Valve, Safety Pressure Relief |
| 732-00018 | Valve, Solenoid w/ coil 1/2" 5/8" Orifice |
| 732-00004 | Valve, Solenoid w/ supply |

STERLING INC, 5200 W. Clinton Ave., Milwaukee, Wisconsin 53223-0435

STERLING, INC.
PARTS LIST (D-G)
STERLCO PUMP 1 TO 3 HP

| <u>ITEM</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|-----------------|--|
| O | 001-05915 | Motor Screw, (4) Required |
| P | 542-10404 | Water Slinger |
| O | 615-00001 | Bracket |
| R | 081-00024 | Rotary Seal Assembly |
| S | | Impeller-specify part no. and diagram (See pump nameplate) |
| T | 525-00001 | Lock Washer |
| U | 535-00001 | Impeller Nut |
| V | 545-00002 | Housing Gasket |
| W-A | 615-00003 | Threaded Inlet Casting |
| W-B | 615-00002 | Tank Inlet Casting |
| X-A | 001-05915 | Pump Screw for pump w/threaded suction (8) required |
| X-B | 001-05915 | Pump Screw for pump w/tank suction (6) required |
| X-B | 001-05923 | Pump Screw for pump w/tank suction (2) required |

(Above parts illustrated on Form MP-1)

| | |
|-------------|---|
| M-160-00005 | Motor Drip Cover (**) |
| N-720-09003 | Electric Motor 1 HP - 3/60/230-460V Open (#) |
| N-720-09009 | Electric Motor 1 HP - 3/60/230-460V TEFC (#ç) |
| N-720-09004 | Electric Motor 1-1/2 HP - 3/60/230-460V Open (#) |
| N-720-09010 | Electric Motor 1-1/2 HP - 3/60/230-460V TEFC (#ç) |
| N-720-09005 | Electric Motor 2 HP - 3/60/230-460V Open (#) |
| N-720-09011 | Electric Motor 2 HP - 3/60/230-460V TEFC (#ç) |
| N-720-09006 | Electric Motor 3 HP - 3/60/230-460V Open (#) |
| N-720-09012 | Electric Motor 3 HP - 3/60/230-460V TEFC (#ç) |

**Used only on drip proof motors

* State Motor Manufacturer

State Motor Manufacturer if preferred

ç State special specification (i.e. 7EQ-Spec., 7E-Spec., etc.)

Sterling part numbers apply to non-special motors. Consult Parts List in your unit manual for specific motor requirements.

STERLING, INC.
PARTS LIST (D-G)
STERLCO PUMP 1 TO 3 HP

COMPLETE PUMP & MOTOR ASSEMBLY

Open Drip Proof 3450 RPM, 3/60/230-460V

| | |
|--------------|----------|
| 605-00083-11 | 1 HP |
| 605-00084-07 | 1-1/2 HP |
| 605-00065-03 | 2 HP |
| 605-00086-01 | 3 HP |

*TEFC 3450 RPM, 3/60/230-460V

| | |
|--------------|----------|
| 605-00083-01 | 1 HP |
| 605-00084-02 | 1-1/2 HP |
| 605-00065-01 | 2 HP |
| 605-00086-03 | 3 HP |

*7EQ and Explosion Proof Not Included